Transitioning to CNG

U.S. Department of Energy's
9th National Clean Cities Conference

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Agenda

- History
- Current equipment
- Performance comparison
- Future plans

History

- **1986** - Conversion of two GMC buses to run on a mixture of diesel and CNG
- **1990** - CNG conversion kits installed on 19 Eldorado 28-ft gasoline buses
- **1991** - First dedicated CNG buses -15 Orion 40-ft with Cummins L10-240G (phase I)

History (cont.)

- **1992** - Fifteen CNG Orions added with Cummins L10-240G (phase I)
- **1992** - CNG station with two Knox Western compressors providing 900 SCF/min
- **1994** - Added 27 CNG buses for express service with Cummins L10-260G (phase II)

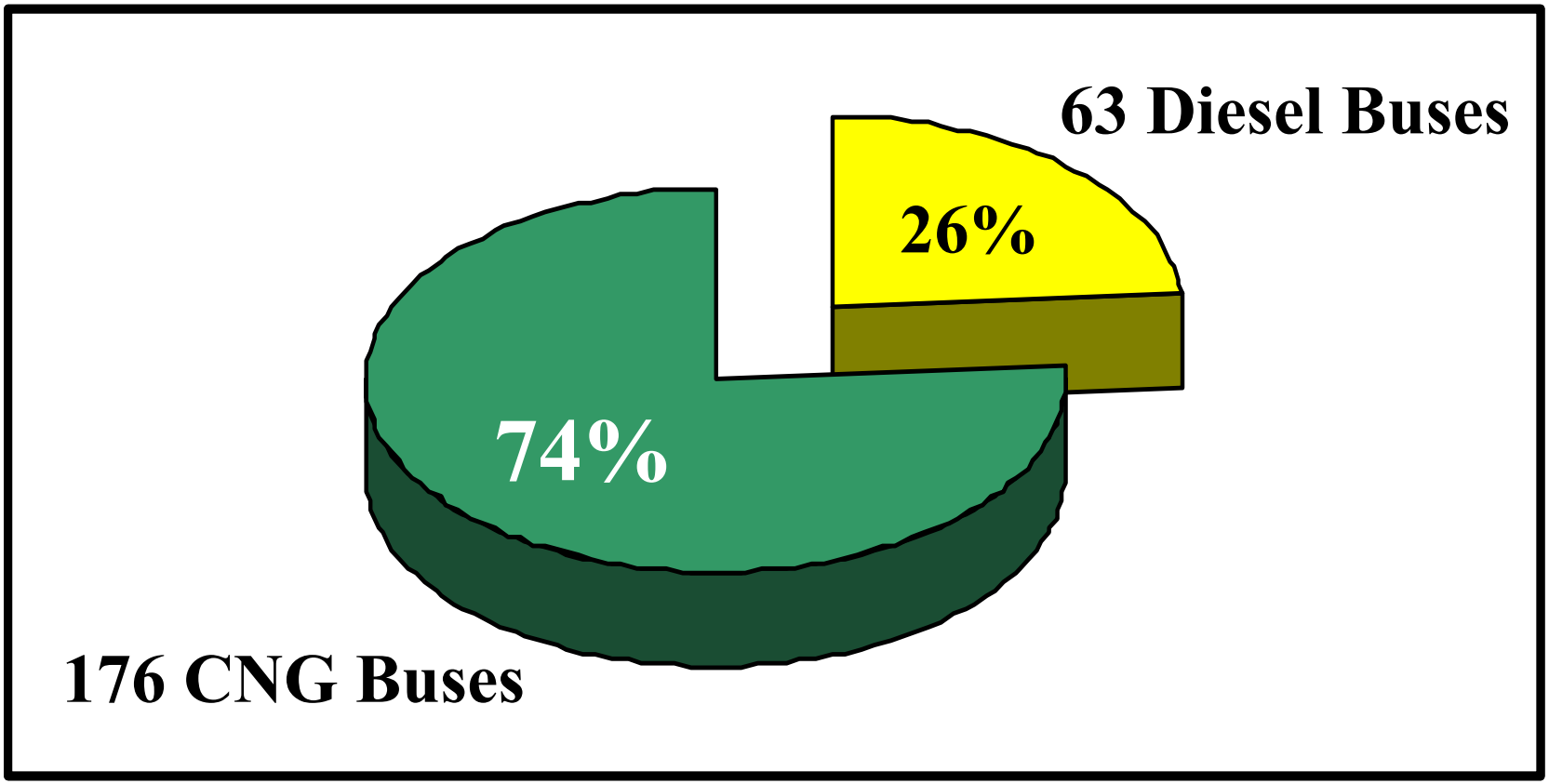
History (cont.)

- **1996** - Fifteen more CNG buses for express service with Cummins L10-280G (phase III)
- **1998** - Forty-five New Flyer 40-ft buses with Cummins C8.3-275G
- **2000** - Third compressor added to CNG station for a total 1907 SCF/min

History (cont.)

- **2001** - Twenty-one more New Flyer 40-ft buses with Cummins C8.3-275G
- **2002** - Twenty New Flyer 40-ft express buses with Cummins C+8.3-280G
- **2003** - Eighteen New Flyer 40-ft CNG buses with Cummins C+8.3-280G

Current Equipment



Current Equipment

Cummins L10G (phase I)

- 240 HP/750 ft.lb.

1991 & 1992 Orion I

- 30 in local service
- Average 447K miles per bus

Current Equipment

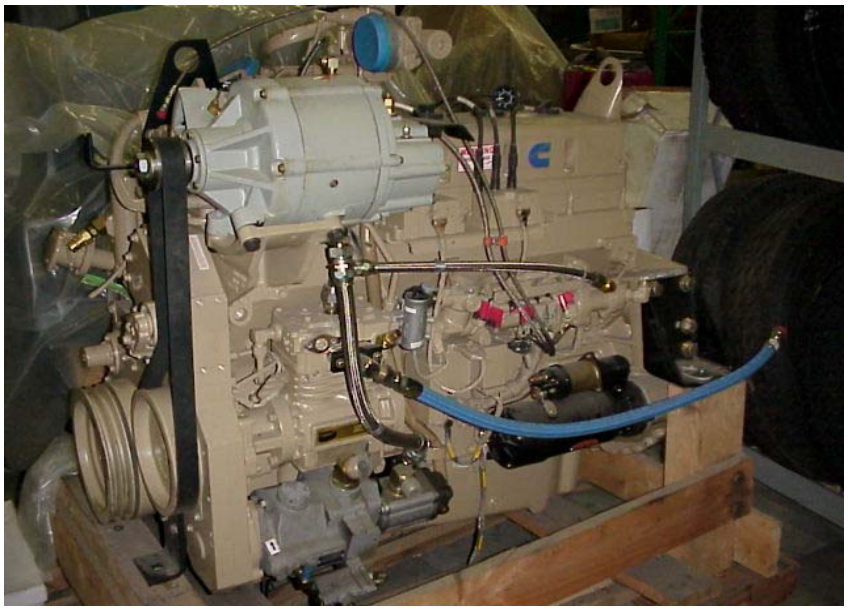
Cummins L10G (phase II)

- 260 HP/850 ft.lb.

1994 Orion V

- 27 in express service
- Average 444K miles per bus

Current Equipment



Cummins L10G (phase III)

- 280 HP/900 ft.lb.

1996 Orion V

- 15 in express/local service
- Average 241K miles per bus

Current Equipment

Cummins C 8.3G

- 275 HP/750 ft.lb.

1998 & 2001 New Flyer C40LF

- 66 in local service
- Average 172K miles per bus

Current Equipment

Cummins C+8.3G

- 280 HP/850 ft.lb.

2002 New Flyer C40LF

- 20 in express service
- Average 64K miles per bus

Current Equipment

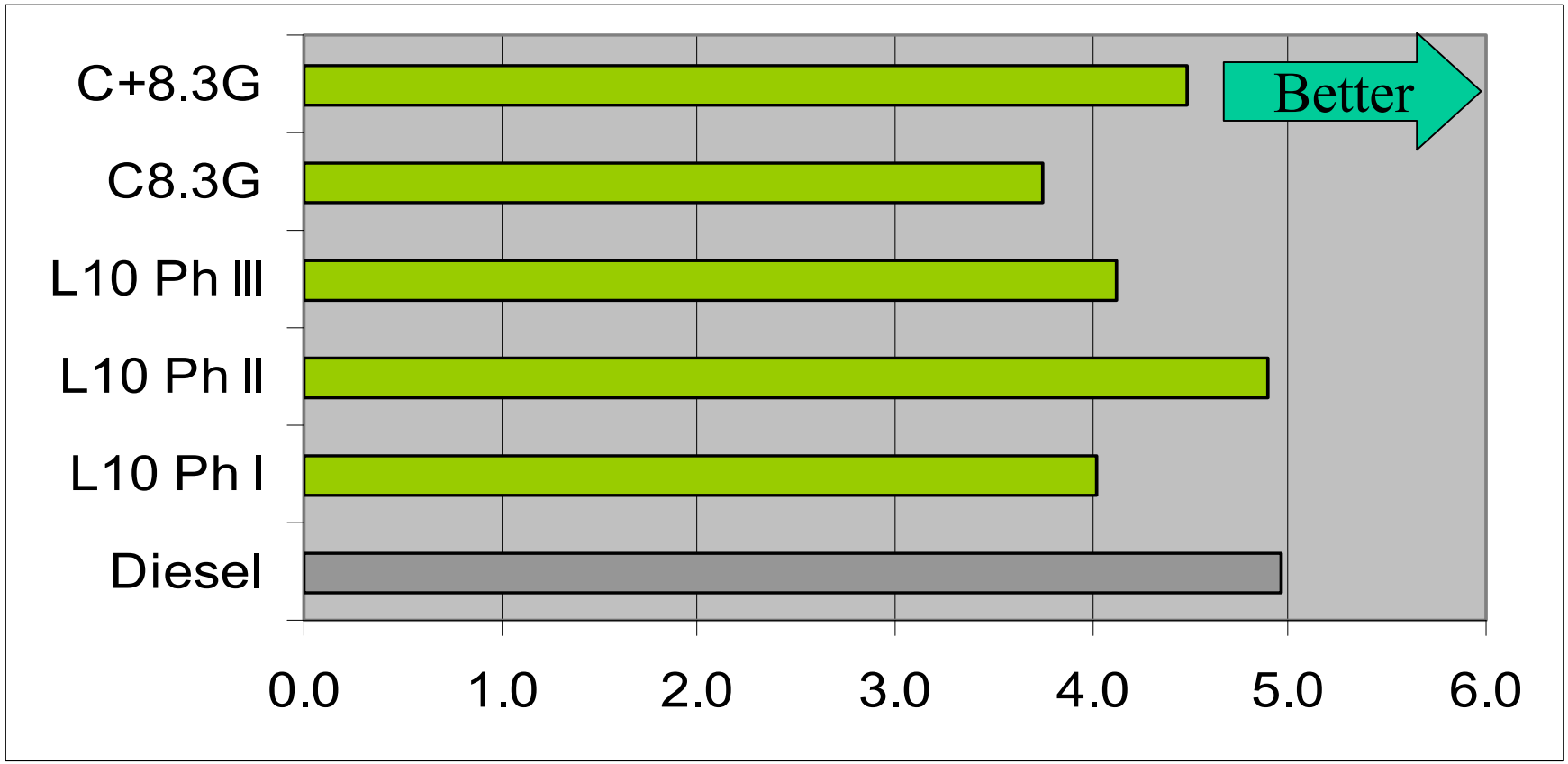
Cummins C+ 8.3G

- 280 HP/850 ft.lb.

2003 New Flyer C40LF

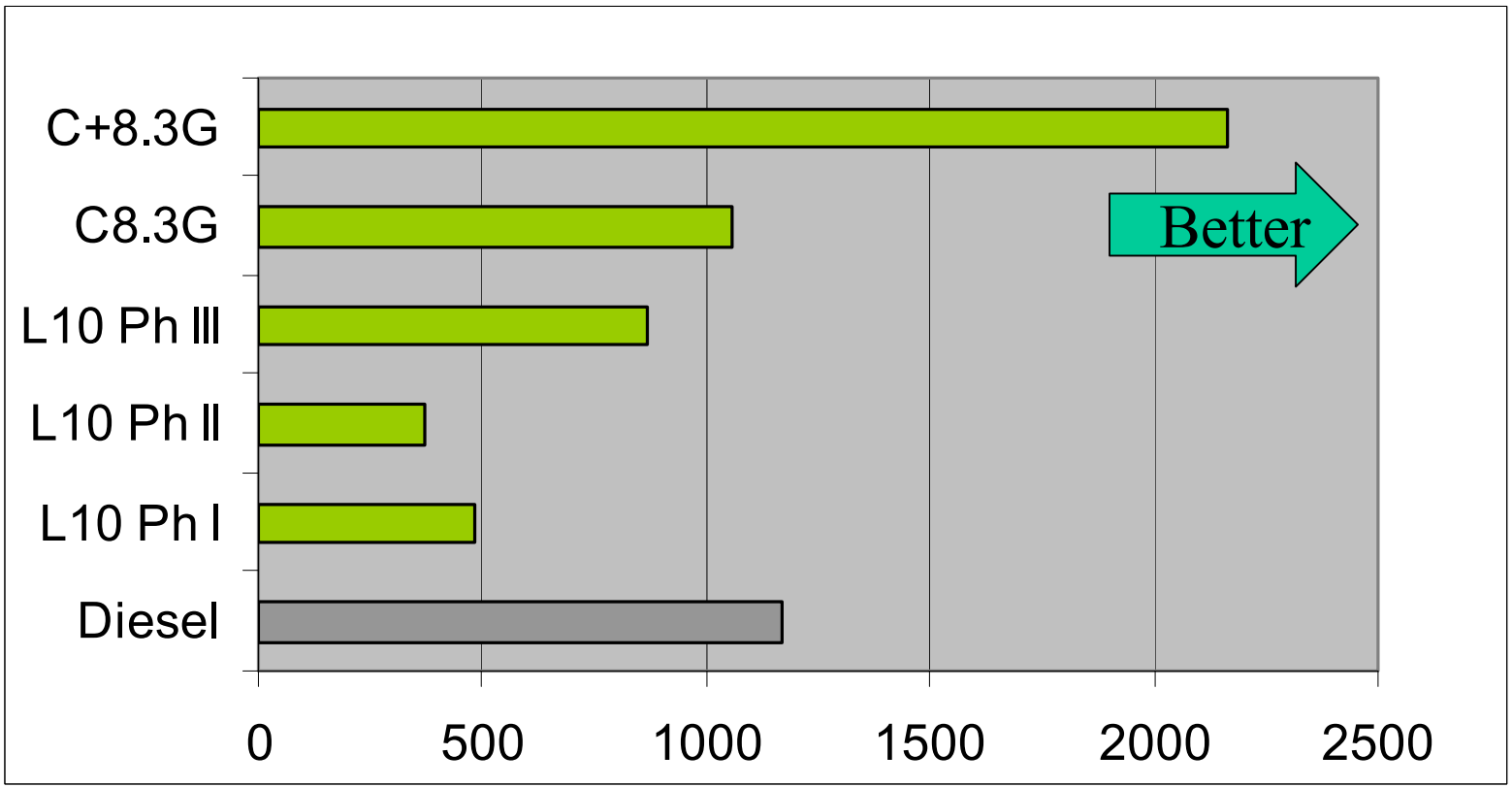
- 18 in local service
- Average 17K miles per bus

Fuel Consumption



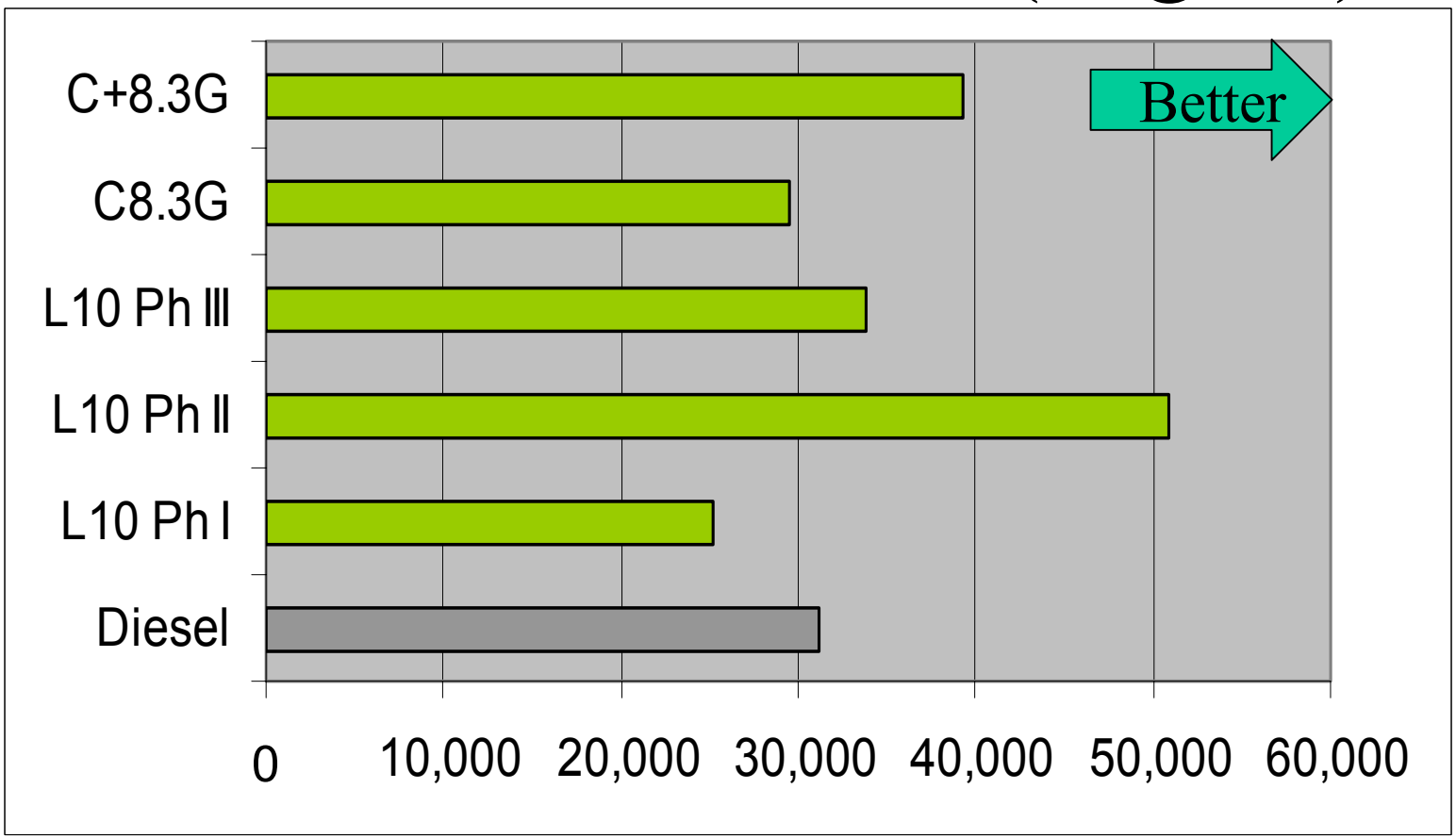
Miles per diesel gallon equivalent at 137,000 BTU/diesel gallon

Oil Consumption



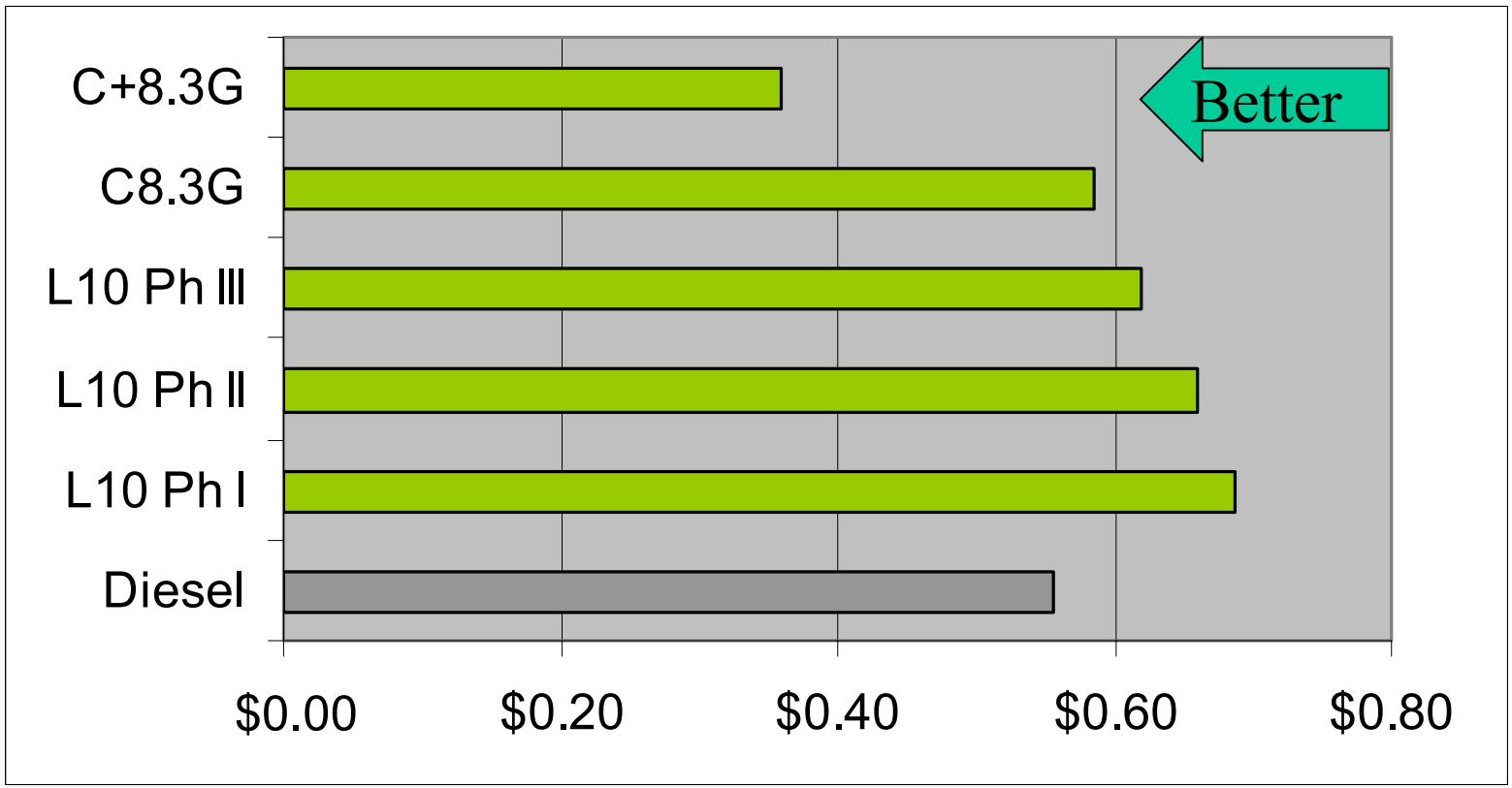
Miles per quart

Miles/Road Failure (engine)



Miles between engine-related road failures

Total Cost Per Mile



Future Plans

- **2003** - Twenty 30-ft CNG buses to replace 40-ft diesel buses on low-volume local routes
- **2003** - Expand CNG station to 4000 SCFM with liquefied natural gas storage and vaporization
- CNG/electric hybrid demonstration when available

Conclusion

- 17-Year history of innovation
- Moving toward 100% CNG fleet
- Continuing improvement efforts
- Competitive fleet performance


PIERCE TRANSIT
the way to go!